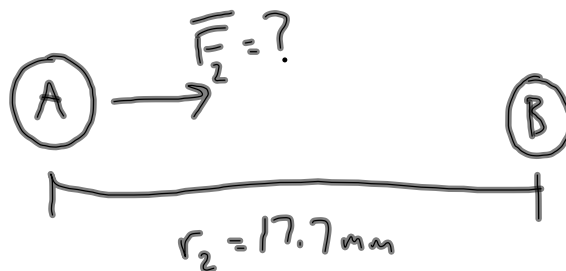
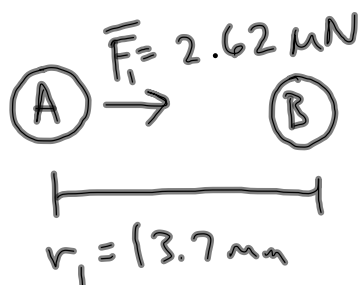


P. 666 #4:

$$F_1 = \frac{k q_A q_B}{r_1^2} \quad F_2 = \frac{k q_A q_B}{r_2^2}$$

$$F_1 r_1^2 = k q_A q_B \quad F_2 r_2^2 = k q_A q_B$$

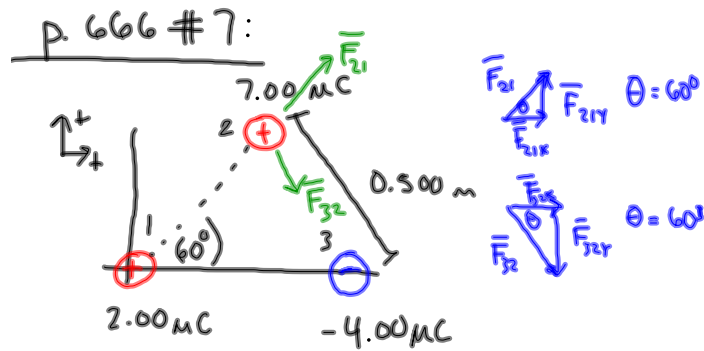
$$F_1 r_1^2 = F_2 r_2^2$$

$$F_2 = \frac{F_1 r_1^2}{r_2^2}$$

$$= \frac{(2.62 \text{ E-}6 \text{ N})(13.7 \text{ E-}3 \text{ m})^2}{(17.7 \text{ E-}3 \text{ m})^2}$$

$$= 1.57 \mu\text{N}$$

HW 14 Solutions AP Physics



$$\begin{aligned}
 \Sigma \vec{F}_x &= \vec{F}_{21x} + \vec{F}_{32x} \\
 &= F_{21} \cos(60^\circ) + F_{32} \cos(60^\circ) \\
 &= \frac{k|q_1||q_2|}{r_1^2} \cos(60^\circ) + \frac{k|q_2||q_3|}{r_2^2} \cos(60^\circ) \\
 &= \frac{(1)(2E-6C)(7E-6C)}{(1.5m)^2} \cos(60^\circ) + \\
 &\quad \frac{(1)(7E-6C)(4E-6C)}{(1.5m)^2} \cos(60^\circ) \\
 &= 0.756 \text{ N}
 \end{aligned}$$

$$\begin{aligned}
 \Sigma \vec{F}_y &= \vec{F}_{21y} + \vec{F}_{32y} \\
 &= F_{21} \sin(60^\circ) - F_{32} \sin(60^\circ) \\
 &= \frac{k|q_2||q_1|}{r_1^2} \sin(60^\circ) - \frac{k|q_3||q_2|}{r_2^2} \sin(60^\circ) \\
 &= \frac{k|q_2|}{r^2} \sin(60^\circ) [|q_1| - |q_3|] \\
 &= \frac{(1)(7E-6C)}{(1.5m)^2} \sin(60^\circ) [(2E-6C) - (4E-6C)] \\
 &= -0.436 \text{ N}
 \end{aligned}$$

$\vec{F} = 0.872 \text{ N} @ 30^\circ \text{ S of E}$